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TMX JOURNAL DATA BASE USERS MANUAL

Christina Burdett
Mike Gorvad
Bill Meyer
Skip Perkins
Mark Stewart
Darrel Whitney

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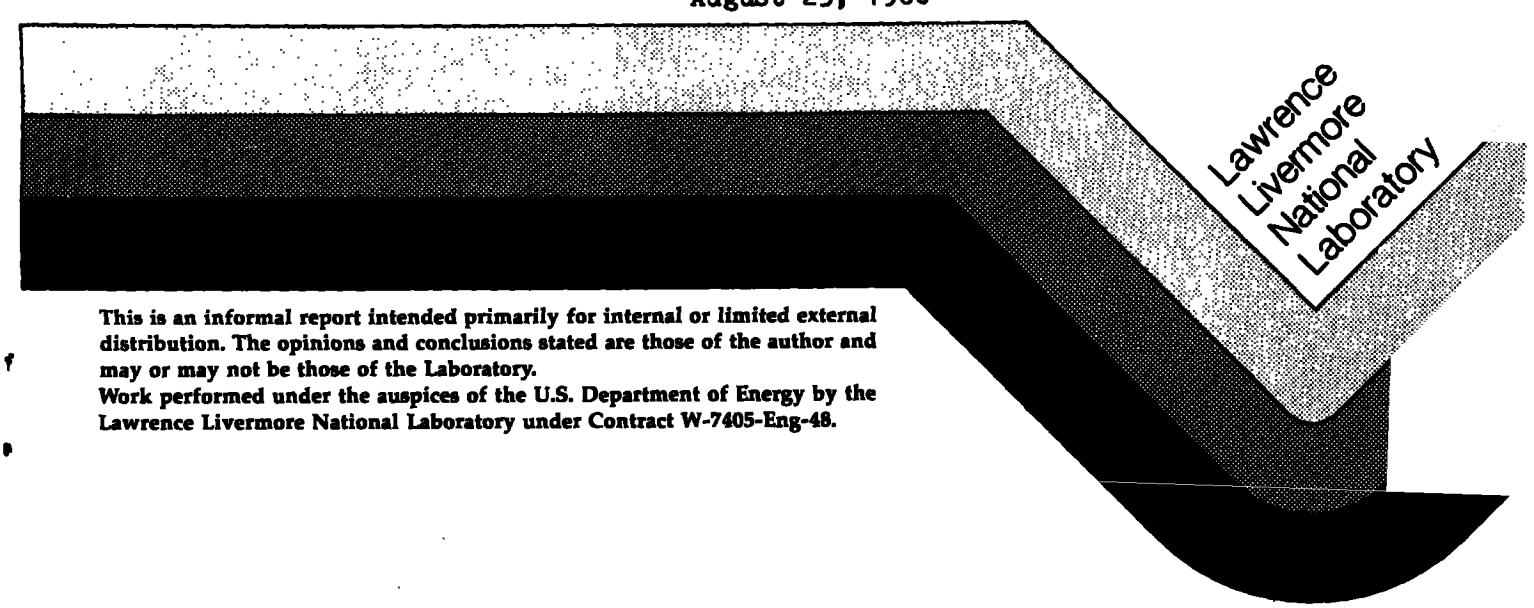

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Tmx Journal Data Base Users Manual

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Manual History

Release 2-Dec-85
Update 1..... 2-Jun-86

The primary purpose of the journal database is the searching and scanning of data which summarizes the basic shot information in a meaningful way. The database program has met the following goals.

1. Shots are searchable on discrete quantities such as date, shot number and keywords.

2. The following type of searches are possible:

   "Find all shots with F < G"

   where F and G are arithmetic expressions. These expressions may contain numerical constants, scalar data , or vector data. A complete set of algebraic operators are available and the full set of relational operators are available (<,>,=,...). In the case of = and #, the user can specify a tolerance at the beginning of the search.

3. Successive searches are considered to be searches on the subset of shots defined by the previous search resulting in a logical ANDing of constraints. It is possible to back up a level when a given search is too constraining and produces a null subset.

4. Two subsets of shots are kept: One subset contains the shots that satisfied the constraint; the second subset contains those shots for which a determination could not be made (due to missing data or similar reasons). The user can selectively move shots from the second subset to the first.

5. Subsets selected by searching can be saved for future reference. It is possible to reload saved subsets to further constrain the subset. The user can list the search constraint that placed the shots in a given subset.

6. Data can be copied out of the database for further analysis. Also data is extractable into printable files.

Data In The TMX Journal Data Base

Shot date and number
Shot Keywords (on/off parameters such as 'ecrh5kg')
Time base min,inc,name,units (currently 81 at 1ms res)
Shot comments *
Shot parameters (numeric or ascii parameters such as 'magnet case')
Shot vectors (vector parameters) **
Attribute name,units,geometry, iv name,units
Attribute parameters **
Attribute comments *
Channel data,mnemonic,geometry value
Channel parameters **
Channel comments *

* users may add comments to the data base
** not fully implemented

Quick Reference

To get a list of shots that have been loaded - directory

To see the data for a particular attribute - view

To get the center cell density from one shot into SELECT - extract

To get the center cell density at 40 ms for every shot in the data base into SELECT - enext

To get a list of all shots in the database that had a center cell density > 2e12 - search

You just made a search and now the data base says you have 0 shots in your subset. To get them back - undo

To get your favorite shot into the data base - load

You want to restore the data from a deleted shot - retrieve

You want to do some work on a list of shots you searched and saved last week - restore

You want to use the data base - tmx

You no longer need a shot in the data base - delete

You have a subset of shots and want to save your work - keep

You want to search on keywords but don't know what the keywords are - list

Arithmetic expressions
Produce results of type real.

SYNTAX

<operand>
or
<operand0> <operator1> <operand1> ..... <operatorn> <operandn>
or
<function> <operand>

where:
operand is a attribute specification, or
operand is a shot parameter specification, or
operand is a vector specification, or
operand is a type real constant (i.e. 2e-12).
operator is an arithmetic operator.

The arithmetic operators are : +,-,/,*,**
The arithmetic operators are evaluated left to right.
The functions are ABS,EXP,LOG,LN,SIN,COS,TAN,ARCSIN,
ARCCOS,ARCTAN,SLOPE,DIFF,INT,SQRT.
Functions are evaluated left to right and take precedence
over the arithmetic operators.
Parentheses can be inserted to change order of evaluation.

ABS - absolute value
EXP - value of e raised to the argument
LOG - base 10 logarithm
LN - natural logarithm
SIN - sin of radian argument
COS - cos of radian argument
TAN - tan of radian argument
ARCSIN - radians angle of sine argument
ARCCOS - radians angle of cosine argument
ARCTAN - radians angle of tangent argument
SLOPE - value of A in least sqares fit to Ax+B

DIFF - new array $y'(i) = \dfrac{(y(i+1) - y(i))}{\text{tinc}}$

INT - new array $y(i) = \text{sum from 1 to i of } \dfrac{(y(i+1) + y(i)) * \text{tinc}}{2.0}$

SQRT - square root

BUGS/FEATURES

This is an inclusive description. See command for any restrictions.

Attributes

The following list are the attributes whose data is loaded into the data base as of 6/2/86.

BGP	BMSUMP
CONFIN	DMLOOP
DMLZZ	E1TP
E5KP	E5KTP
EBAR	EDELIS
EDGP	EFELHE
EFELJE	EFELPE
EFELWE	EHELIS
EISEDP	EPECFP
FCE	FCE2
FCEICC	FCW
FCWICC	FMG
IBEAMS	ICRH2P
ICRHP	IG10P
IONIZE	MIS94P
MISP	NBSUM
NSIB	PCDP
PECEFP	PECSP
PFIG	PFLFET
PHELIS	PPCEI
PPCEV	PPCIES
PPCIWS	PPCWI
PPCWV	PPDTOT
PRFEP1	PRFEP2
PRFEP3	PRFEP4
PRFEP5	PRFEPT
REIMP	RSEDIP
TAURAT	VGASVR
W1TP	W5KP
WDELIS	WECEFP
WFELHE	WFELJE
WFELPE	WFELWE
WHELIS	WISEDP
WPECFP	XDELIS

BATCH

Create a batch job for doing background extracting and plotting.

SYNTAX

*** not implemented ***

COMMENT

Add comments to the data base.

SYNTAX

com [attribute spec] [date] [number] [switch]

DESCRIPTION

date Date of particular shot.
Prompted for if not given.

number Shot number of particular shot.
Prompted for if not given.

attribute spec
Name of piece of data.
Not needed for shot comment.
Prompted for if no given.

switch
/Shot Comment added to shot entry.
/Attribute
Comment added to attribute entry.
/Channel
Comment added to a particular channel.

EXAMPLES

```
Command> comm 1/15/85 /s
Shot Number> 24
Input comment ( up to 80 characters ):
this shot is plugged

Command>
```

BUGS/FEATURES

Comments can not be searched.
Use the directory command to display comments.

DEFINE

Allows the user to give a name to a formula or expression for later use in a search command.

SYNTAX

def

DESCRIPTION

Define command is a prompt driven command. The user is prompted for the name, formula , and an optional comment.

Relational expressions

See section on relational expressions.

Logical Expressions

See section on logical expressions.

Keyword Specification

Produce results of type logical with values true or false.

Syntax:

KEY(<character string>)

where:

character string is an exact match to a defined keyword in the data base
character string 80 characters max

Note: Use the 'list /k' command to see the defined keywords.

Attribute Specification

Data of type real.

Syntax:

<name>
<name>[<channel>]
<name>(<time>)
<name>[<channel>](<time>)

where:
name is the name of an attribute
channel is either an integer channel number or a 6 character channel mnemonic
maximum number of channels that can be defined is ten for now
time is a single integer for one time point, or two integers separated by a colon for a time range

If time information not given all time points are evaluated.
If channel information not given all channels are evaluated.
Example attribute specifications:

```
ne[miccmp](20:30)
ne[2](20)
ne
eisedp(35:40)
```

Any attribute specification that can not be converted to data due to missing data will cause the shot to be placed in the 'not evaluated' subset. Shot may be selectively moved to the define subset later.

Shot Parameter Specification

Data of type real.

Syntax:

```
<name>
```

where:
name is the parameter name
Note: The data base program will try to determine if a string is a shot parameter, or a vector.
If the program can not find one with name specified it assumes the name is an attribute. The effect of this is that no name can be defined for shot parameters, vectors, and attributes.
Since no shot is thrown out for missing data, this also means that a typing mistake will cause all shots defined to be flagged as not evaluated due to missing data.

Vector Specification

Data of type real.

Syntax:
<name>
<name>(index)

where:
name is the vector name
vector index is a single integer for one index point, or two integers separated by a colon for a index range

Note: The data base program will try to determine if a string is a shot parameter, or a vector. If the program can not find one with name specified it assumes the name is an attribute. The effect of this is that no name can be defined for shot parameters, vectors, and attributes. Since no shot is thrown out for missing data, this also means that a typing mistake will cause all shots defined to be flagged as not evaluated due to missing data.

Control Specification

FUZZ:
syntax: FUZZ(operand)

where:
Operand controls the comparison of values with = and #. If abs(a/b-1)<operand, and neither a nor b is zero, then a=b. Default fuzz value is 1e-17.

BUGS/FEATURES

Most common error seen is giving both sides of equation when asked for a formula.
For example: If you wish to define necc as misp[miccmp]*3e-14 you would give necc as the name. The common error when asked for the formula is to give necc=misp[miccmp] * 3e-14. The correct formula is misp[miccmp] * 3e-14 The blanks are important as delimiters.
You should try at least one search using the formula to insure that it will work. Most common symptom of a bad formula is all shots are deleted from your search set. This will also do some syntax checking that define cannot do.

Formula defined by user is available only to user. A wizard may define a global formula available to all users. If a global and user formula exist with the same name, users formula is used.

ERROR MESSAGES:

First pass: fatal

Function not implemented.
Keyword not found.
Integer time information only inside ().
Non-numeric or integral argument for fuzz function.

Second pass: fatal

Math operation with non-data arguments.
Function operation with non-data arguments.
Condition operation on boolean arguments.
Mixed type arguments in conditional.
Mixed type arguments for logical operator.
Command does not evaluate to single value.
Error in evaluation of command, please tell a wizard.

DELETE

This command will archive data from a particular shot in the data base to magnetic tape. Only the actual data is archived.

SYNTAX

DELETE [date] [number]

DESCRIPTION

date Date of shot to delete
If not specified user will be prompted

number Shot number to delete
If not specified user will be prompted

EXAMPLES

DELETE 11/20/85
user prompted for shot number
DELETE 20
user prompted for date
DELETE 11/20/85 20
does it

BUGS/FEATURES

Shots deleted on a request basis only.
Very slow.
Not normally necessary. Shots are currently being deleted based on usage.

DIRECTORY

Provides a list of shots and related information in the data base.

SYNTAX

DIrectory [date] [number] [name] [switches]

DESCRIPTION

date — Date of particular shot
Default is all dates in data base

number — Shot number of particular shot
Default is all shot numbers in data base

name — Attribute name
Default is don't display attribute info

Switches — Default for all switches is off

/Attribute	Include attribute info in display Switch assumed if attribute name given
/Comment	Include comments Default is shot comments
/C:Shot	Display shot comments
/C:Attributes	Display attribute comments
/C:Geometry	Display channel comments
/C:Mnemonic	" "
/Geometry	Display geometry channel info
/Mnemonic	" "
/Search	Display search constraint that placed shot on list being displayed
/Unqualified	Display shots in subset that didn't satisfy constraint
/Not Evaluated	Display shots in subset that couldn't be evaluated (due to missing data or other reason)
/Output:filename	Direct the output to file 'filename'
/Time	Include time base info
/Deleted	Display deleted shots only

EXAMPLES

```
Command> dir 5/23/85 8 misp /g
=========================================================================
05/23/85 #  8
 +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  MISP   Ver  1 CM-2                              ZMIS    CM
   -----------------------------------------------------------------------
   MISP[1]     MIE075 -657 CM
   MISP[2]     MIE5KG -559.69995 CM
   MISP[3]     MICCMP  CM
   MISP[4]     MIW5KG 558 CM
=========================================================================

Command>
```

BUGS/FEATURES

/d /u /n — If more than one of these three are given in a command only the last switch is turned on.

ENEXT

Copies a single time point for a list of attributes, and a list of shots,into a file readable by an analysis program.

SYNTAX

ENEXT <name1> [name2] [name3] ... [name8] <time spec> [format]

DESCRIPTION

name1 ... name8

Attribute specification.

name[channel number]

name[mnem]

time spec

at x (values of x determined by shot time base)

when <relational expression>

after <relational expression>

format

/se file format readable by program SELECT (default)

/d file format readable by program DATAPLOT

Relational expressions

See section on relational expressions for general definition.

RESTRICTIONS:

Syntax with implied date or shot number not allowed.

Arithmetic expression

See section on arithmetic expressions.

RESTRICTIONS:

Operands may only be an attribute specification.

EXAMPLES

ENEXT misp[3] at 25

ENEXT dmloop[1] when ecrh[3] > 50

ENEXT fceicc[2] ppcei[2] after ecrh[3] > 50

ENEXT misp[miccmp] after ecrh[3] > 50

BUGS/FEATURES

Channel numbers are replaced with mnemonics from
first shot with specified channel number.
Logical expressions not yet implemented.
Can not specify time range to look at.

ERROR MESSAGES:

First pass: fatal

Dates not allowed in ensemble extract.
Function not implemented.
Keyword not found.
You must specify the channel number or mnemonic to ext.
Use at parameter to specify time point.
Integer time information only inside ().
Non-numeric or integral argument for fuzz function.

Second pass: fatal

Math operation with non-data arguments.
Function operation with non-data arguments.
Condition operation on boolean arguments.
Mixed type arguments in conditional.
Mixed type arguments for logical operator.
Expression after at not numeric.
Extract condition does not evaluate to a boolean.

Evaluation pass: fatal but shots already evaluated will
be in file

Range of data points must be equal when __ two arrays.
Number of channels must be equal when __two arrays.

First two columns or attributes are encoded shot and time
of extract.
Shot is a real number with the following format:
mmddy.ss - y is last digit of year
- two digit shot numbers only

EXTRACT

This command will copy a particular piece of data in the data base into a file.

SYNTAX

EXTract [date] [number] [name] [switch]

DESCRIPTION

date Date of particular shot
Prompted for date if not given.

number Shot number of particular shot
Prompted for shot number if not given.

name Name of piece of data
Prompted for name

Switches Default for all switches is off
/Data Extract attribute data into file readable by SELECT (This is the default switch)
/Shot Extract shot parameters into a DATAPLOT file
/P Extract attribute data into file readable by DATAPLOT

EXAMPLES

```
Command> ext misp /d
Output Filename (SIG012162138337.DAT)> misp
  Data will be extracted to misp.DAT

Shot Date> 5/23/85
Shot Number> 8
```

```
05/23/85 #  8
  ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
  MISP   Ver  1 CM-2                    ZMIS   CM
```

```
-------------------------------------------------------------
MISP[  1]                MIEO75 -657           CM
MISP[  2]                MIE5KG -559.69995     CM
MISP[  3]                MICCMP                CM
MISP[  4]                MIW5KG 558            CM
=============================================================
Enter Number(s) to extract or "all"> 3
  Leave extract? > y
  Command>
```

BUGS/FEATURES

Any parameter given on command line can not be changed for a given file. If shot number and date are specified on the command line the command will prompt for attribute but will always use specified shot.

Can not specify channel or time info on command line.

If a single parameter is given the /d switch is assumed. If no parameters and no switch is given user will get a special extract prompt. A return to this prompt will then default to /d.

User is prompted for file name. (up to 16 chars)

Extracting shot parameters to SELECT is not planned since SELECT won't allow any manipulation of arrays with only one point.

INFORMATION
Runs the TOPS-20 command information

SYNTAX
i <arg>

DESCRIPTION
See TOPS20 command reference manual

EXAMPLE
i o
information about output queue
i b
information about batch queue
i mount
information about tape mount requests

KEEP

Creates a disk file containing the current subset of shots created with search command.

SYNTAX

kee

DESCRIPTION

No arguments. User prompted for file name. (20 chars)

BUGS/FEATURES

Must be in search mode to use this command.

Legal characters in file name are letters and digits only.

Keep executed automatically on abort in search mode. File name kept - ABORTKEEP

Keywords

The following list are the keywords whose switches are set for shots in the data base as of 6/2/86.

BEAM40 - 40 degree sloshing beam
BEAM47 - 47 degree sloshing beam
BEAMCC - center cell beam
BEAMLE - low energy neutral beam
BEAMP - pump beams
ECH18C - 18 GHz center cell ecrh
ECH18P - 18 GHz plug ecrh
ECH5KG - 5kG ecrh
ECHI10 - inner 10 kG ecrh
ECHO10 - outer 10 kG ecrh
GASCCM - center cell gasbox
GASTR - transition gasbox
GASWGB - west gasbox
ICRH - irch on/off

LIST

List definitions in the data base.

SYNTAX

li [date] [shot] [switches]

DESCRIPTION

date and shot needed for /a switch only
ignored for any other switch

switches

/a list of attributes found on tmx archive tape
/p or /f list of defined shot parameters and formula
/k list of defined shot keywords
/o:file divert output to file
/m list of defined macros (search formulas) user and global

EXAMPLE

```
Command> list /a

Shot Date> 5/23/85
Shot Number> 8

  Attribute Table for shot 05/23/85 #   8
```

Name	ver	# of chans	# of missing chans	In Journal Data Base	Loadable in Full Res Data Base
.	.	.	.	.	.
.	.	.	.	.	.
E1TP	1	2	0	yes	yes
E1TPSS	1	2	0	no	yes
E5KAR	1	4	0	no	yes
E5KP	1	4	0	yes	yes
.	.	.	.	.	.
.	.	.	.	.	.
.	.	.	.	.	.

BUGS/FEATURES

If switch not given, entire command must be retyped with switch.

Only private macros defined by the user or global macros defined by a wizard can be listed. Other users macros can not be (easily) listed.

LOAD

Reads data from a particular shot into the data base from a TMX archive tape.

SYNTAX

lo [date] [number]

DESCRIPTION

User prompted for date and shot if not specified.

BUGS/FEATURES

Each load request is a tape mount.
All shots processed at go 2 and above will automatically be loaded.

Logical expressions

Produce results of type logical with values true or false.

Syntax:

<operand0> <operator1> <operand1> <operator2> ..... <operatorN> <operandN>

where:

operand is a relational expression, or
operand is a keyword specification.
operator is a logical operator

The logical operators are: OR,EXOR,AND
Logical operators are evaluated left to right.
If any operand is not evaluated due to missing data, the logical expression will still evaluate to true but will not evaluate to false.
Parentheses can be inserted to change order of evaluation.

MAIL

Runs the TOPS20 mail utility mm.

DESCRIPTION

See TOPS20 command reference manual

MIC files

A file containing commands and sub-commands executed by TOPS20 or programs that TOPS20 invokes.

SYNTAX

do file

DESCRIPTION

File must have '.mic' extension or extension must be explicitly given. 'do file.ext'
A command for TOPS20 starts with '@'
A command or answer for a program invoked by the mic file starts with '*'
A comment starts with ';'
File must end with a single '@'

EXAMPLE

test.mic

```
--------
@tmx j     ; fire up the data base
*sea       ; give sea command to data base - search mode
*quit
*quit
@
```

MOVE

Puts a shot into the search subset after it has been removed due to missing data.

SYNTAX

move [/a]

DESCRIPTION

/a Automatically moves all shots on missing data list into subset.

If /a not specified, user prompted for each shot. When shot is displayed it may be added to search list by hitting the space bar. A carriage return will leave shot on missing data list.

BUGS/FEATURES

Must be in search mode.

PLOT

Allows users to plot data in the data base.

SYNTAX

plot

There are no command line arguments.
Each prompt will respond to ??
with help.

DESCRIPTION - of prompts

Enter date (month,day,year), shot
- commas are the delimiters, '/' not allowed

Enter monitor type (t=TEK,g=GUSS,n=NON-GRAPHIC):
- hard copy file is made by default GRAFL.DD80 is file name

Answer file name or <cr> for interactive
- .af extension assumed
- following commands can be placed in answer file
- looks for file on connected private directory

Enter input attribute name (or /E)
- no existance check done at this time
- /e ends input of attribute names
- /a aborts the plot command

Graphics level (0-5) (default: 0)
- level 0 plots up to 9 channels of first attrib, auto scales
- levels 3-5 not yet implemented
- following commands are level 1 and up

Do you wish a copy? (YEs or NO) (default: YE)
- level 1
- default is yes
- plot sent to GRAFL.DD80
- run graf10 to send this plot to versatec
- overwrites previous plot in hardcopy file

```
Plot ID (up to 10 alphanumeric characters):
        - level 1
        - informational string on plot title
        - first blank ends comment
        - use underscore for embedded blanks
        - answer files should use '^^^^^^' after
          this answer to allow for recovery from
          an aborted plot
Point or line plot (0=point,1=line (default: 1)
        - level 2
        - default is line plot
Dependent variable position #
        - level 1
        - y axis attribute
Minimum, maximum for plot (default: from data )
        - level 2
        - y axis scales
Variable position #
        - level 1
        - x axis attribute
Enter either index or *,mnem
        - level 1
        - channel number or channel name to plot
          on x axis
        - asked if answer to previous question was
          was an attribute
Minimum, maximum for plot (default: from data )
        - level 2
        - x axis scales
Enter either index or *,mnem
        - level 1
        - channel number or channel name to plot
          on y axis
        - not asked if x axis is geometry iv
        - answer files should use '^^^^^^' after
          this answer to allow for recovery from
          an aborted plot
Enter time value in ms
        - level 1
        - real number in units of ms
        - asked if x axis is the geometry iv
        - answer files should use '^^^^^^' after
          this answer to allow for recovery from
          an aborted plot
```

Next prompt is same as that following the plot id prompt. To end prompts and begin plotting respond with a '/e' instead of answering next prompt.

EXAMPLE: (single plot answer file)

```
misp                          \ input attribute 1
mis94p                        \ input attribute 2
/e                            \ end of inputs
2                             \ level 2 plot
ye                            \ make copy in GRAFL.DD80
plottest                      \ plot id
^^^^^^^^^^^^^^^^^^^^^^^^^^^^^
1                              \ input attribute #1
1                              \ misp
-1e13,10e13                    \ min,max
1                              \ vs time
0,100                          \ min,max
*,mie5kg                       \ channel
^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^
/e
```

BUGS/FEATURES

Plot is not exceptionally fast.
Level 0 will only plot first input attribute.
Suggest using '/l' switch on graf10 for hardcopy.
Can't append plots in file GRAFL.DD80
Everthing after a '\' in the answer file is taken as a comment.

Relational expressions

Produce results of type logical with values true or false.

Syntax:
<operand1> <operator> <operand2>

where:
operand is an arithmetic expression
operator is a relational operator

or

Syntax:
<operand1> <operator> <implied operand2>
<implied operand1> <operator> <operand2>

where:
operand is a date, or
operand is an integer number taken to be the shot number.
implied operand is of the same type as operand and has the value of the shot being defined.
example: = 2/5/85, < 2/5/85

The relational operators are: <,>,=,#,>=,=>,<=,=<
Parentheses can be inserted to change order of evaluation.

BUGS/FEATURES
This is an inclusive description. See command for any restrictions.

RESTORE
Restores a shot subset that was saved with KEEP

SYNTAX
rest

DESCRIPTION
user prompted for file name

BUGS/FEATURES
Must be in search mode.
Restore ABORTKEEP to recover from abort.

RETRIEVE
Restores the data for a deleted shot into the data base

SYNTAX
ret [date] [shot]

DESCRIPTION
User prompted for missing information

EXAMPLE
ret 5/28/85
user prompted for shot number

BUGS/FEATURES
Extremely slow.
Reload is faster.

SEARCH

Allows the user to select a subset of shots that satisfy a given constraint.

SYNTAX

```
sea
sea <relational expression>
sea <logical expression>
sea <keyword specification>
```

DESCRIPTION

Search command originally puts user in search mode.

Relational expressions

See section on relational expressions.

Logical Expressions

See section on logical expression.

Keyword Specification

Produce results of type logical with values true or false.

Syntax:

KEY(<character string>)

where:

character string is an exact match to a defined keyword in the data base
character string 80 characters max

Note: Use the 'list /k' command to see the defined keywords.

Arithmetic expression

See section on arithmetic expressions.

Attribute Specification

Data of type real.

Syntax:
<name>
<name>[<channel>]
<name>(<time>)
<name>[<channel>](<time>)
where:
name is the name of an attribute
channel is either an integer channel number or a 6 character channel mnemonic
maximum number of channels that can be searched is ten for now
time is a single integer for one time point, or two integers separated by a colon for a time range

If time information not given all time points are evaluated.
If channel information not given all channels are evaluated.
Example attribute specifications:
ne[miccmp](20:30)
ne[2](20)
ne
eisedp(35:40)

Any attribute specification that can not be converted to data due to missing data will cause the shot to be placed in the 'not evaluated' subset. Shot may be selectively moved to the search subset later.

Shot Parameter Specification

Data of type real.

Syntax:
<name>
where:
name is the parameter name

Note: The data base program will try to determine if a string is a shot parameter, or a vector. If the program can not find one with name specified it assumes the name is an attribute. The effect of this is that no name can be defined for shot parameters, vectors, and attributes. Since no shot is thrown out for missing data, this also means that a typing mistake will cause all shots searched to be flagged as not evaluated due to missing data.

Vector Specification

Data of type real.

Syntax:

<name>
<name>(index)

where:

name is the vector name
vector index is a single integer for one index point, or two integers separated by a colon for a index range

Note: The data base program will try to determine if a string is a shot parameter, or a vector. If the program can not find one with name specified it assumes the name is an attribute. The effect of this is that no name can be defined for shot parameters, vectors, and attributes. Since no shot is thrown out for missing data, this also means that a typing mistake will cause all shots searched to be flagged as not evaluated due to missing data.

Control Specification

FUZZ:

syntax: FUZZ(operand)
where:

Operand controls the comparison of values with = and #. If abs(a/b-1)<operand, and neither a nor b is zero, then a=b. Default fuzz value is 1e-17.

EXAMPLES

```
sea misp[miccmp] > 3.e13
sea misp[miccmp] * .03 > 2e12 and key(icrh)
sea abs ( misp[miccmp] * .03 ) > 2e13
```

BUGS/FEATURES

Command given when going into search mode is ignored.
(escape-return repeats last command)

ERROR MESSAGES:

First pass: fatal

Function not implemented.
Keyword not found.
Integer time information only inside ().
Non-numeric or integral argument for fuzz function.

Second pass: fatal

Math operation with non-data arguments.
Function operation with non-data arguments.
Condition operation on boolean arguments.
Mixed type arguments in conditional.
Mixed type arguments for logical operator.
Search does not evaluate to a boolean.
Command does not evaluate to single logical value.
Error in evaluation of command, please tell a wizard.

Evaluation pass: shot placed on missing data list

Range of data points must be equal if greater
than one.
Number of channels must be equal if greater
than one.

SELECT

Program that can read data in a file created by the data base extract or enext command.

DESCRIPTION

Select has help available for all prompts by typing '?'
Important command:

read	read in data from extract file
write	write data into file readable by SIG or DATAPLOT
math	allows arithmetic operators
plot	plot vs time or vs another attribute

SET

Defines default setting for shot date, number, attribute, and switches.

SYNTAX

set [switch]

DESCRIPTION

switch

/on use default settings in subsequent commands
/off turn off default setting usage
/edit will be prompted for values
/create will create empty init file on home:

BUGS/FEATURES

Only some commands use the defaults:
directory, extract, list, and view

Shot Parameters

The following list are the shot parameters whose data is loaded into the data base.

FICRH TX1W	#1 ICRH transmitter frequency
FICRH TX2E	#2 ICRH transmitter frequency
GASFLOIGFETR	east transition gas flow
GASFLOIGFMCC	midplane CC gas flow
GASFLOIGFWCC	west CC gas flow
GASFLOIGFWTR	west transition gas flow
GOSTAT	go status
IMAG40E156	current in coil E156
IMAG40E220	current in coil E220
IMAG40E288	current in coil E288
IMAG40E36	current in coil E36
IMAG40E96	current in coil E96
IMAG40EPICEE	current in east plug inner C coil
IMAG40EPIOFF	current in east plug ioffe coil
IMAG40EPISOL	current in east plug inner solenoid
IMAG40EPOCEE	current in east plug outer C coil
IMAG40EPOSOL	current in east plug outer solenoid
IMAG40ETCEE	current in east transition C coil
IMAG40ETIOFF	current in east transition ioffe
IMAG40W156	current in coil W156
IMAG40W220	current in coil W220
IMAG40W288	current in coil W228
IMAG40W36	current in coil W36
IMAG40W96	current in coil W96
IMAG40WPICEE	current in west plug inner C coil
IMAG40WPIOFF	current in west plug ioffe
IMAG40WPISOL	current in west plug inner solenoid
IMAG40WPOCEE	current in west plug outer C coil
IMAG40WPOSOL	current in west plug outer solenoid
IMAG40WTCEE	current in west transition C coil
IMAG40WTIOFF	current in west transition ioffe
MAGCAS	magnet case
NEMAX TSPZA	upper limit of density measured by Thompson scattering
NEMAX TSPZB	upper limit of density measured by Thompson scattering
NEMIN TSPZA	lower limit of density measured by Thompson scattering

NEMIN TSPZB	lower limit of density measured by Thompson scattering
NETSS TSPZA	best fit of density measured by Thompson scattering
NETSS TSPZB	best fit of density measured by Thompson scattering
PPCCNF	resistance of ppc plates
STIME	time of shot
TEMAX TSPZA	upper limit of Te measured by Thompson scattering
TEMAX TSPZB	upper limit of Te measured by Thompson scattering
TEMIN TSPZA	lower limit of Te measured by Thompson scattering
TEMIN TSPZB	lower limit of Te measured by Thompson scattering
TETSS TSPZA	best fit of Te measured by Thompson scattering
TETSS TSPZB	best fit of Te measured by Thompson scattering
TLASERTSPZA	Thompson scattering laser time
TLASERTSPZB	Thompson scattering laser time
UNIVSN	universal shot #

TMX

starts up the data base

SYNTAX

tmx [data base specification]

DESCRIPTION

data base specification

tmx full full resolution data base

tmx journal journal data base

NOTE: Send a mail message to tmx-wizards asking for access to the data base if you have not used the data base before.

UNDEFINE

Remove definition of a user or global formula from the data base.

SYNTAX

undef

DESCRIPTION

No command string parameters.
Prompted for formula name.
Only wizards can remove a global formula.

UNDO

Recovers shots removed from subset by a search.

SYNTAX

undo

DESCRIPTION

If the last search removes all shots from subset the program gives the user two choices: undo the last search or start over with a clean subset.

BUGS/FEATURES

Must be in search mode.

VIEW

This command will display data from a particular attribute in the data base on a terminal.

SYNTAX

V [date] [number] [name] [switch]

DESCRIPTION

date Date of particular shot
Prompted for date if not given.

number Shot number of particular shot
Prompted for shot number if not given.

name Attribute name
Prompted for attribute if not given

Switches

/Data View attribute data
This is the default switch
/keywords View shot keywords
/Vector View vectors
/Shot View shotparameters

EXAMPLES

```
Command> view

View Command> 5/23/85 misp
Default view switch is /data.
Shot Number> 8
```

```
05/23/85 #  8
  MISP   Ver  1 CM-2                    ZMIS   CM
    MISP[  1]                  MIEO75  -657.00000    CM
    MISP[  2]                  MIE5KG  -559.69995    CM
    MISP[  3]                  MICCMP     +.00000    CM
    MISP[  4]                  MIW5KG  +558.00000    CM
```

```
Enter Number(s) to view or "all"> 3
 Input start time,stop time (ms) >20,25
```

```
MISP   ver 1  05/23/85  shot number    8
MICCMP Z=     +.00000  CM
ms     CM-2
==========
20   6.6240003E+12
21   5.5641603E+12
22   4.7527202E+12
23   4.2062402E+12
24   3.7094401E+12
25   3.11328E+12

Leave view? > y

Command>
```

BUGS/FEATURES

Any parameter given on command line can not be changed in a subcommand. If shot number and date are specified on the command line the command will prompt for attribute but will always use specified shot.

Can not specify channel or time info on command line.

If a single parameter is given the /d switch is assumed. If no parameters and no switch is given user will get a special view prompt. A return to this prompt will then default to /d.